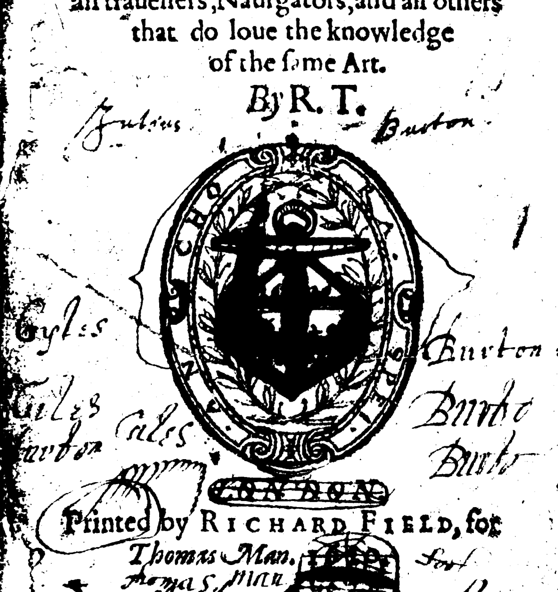




# A BRIEF TREATISE OF THE VSE OF THE Globe Celestiall and Terrestriall:

WHEREIN IS SET DOWNE the principles of the Mathematicks, fit for all trauellers, Nauigators, and all others that do loue the knowledge of the same Art.

By R. T.



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# THE PREFACE TO the Reader.

*I Doe here present thee (gentle Reader (with a briefe collection of the vse of the Globe, which may serue for an introduction to yong Students in the Mathematicks, requiring thee to accept thereof: for I doubt not it will be very good for the furtherance of trauellers in the Art of Nauigation: aud to all others that are desirous of the knowledge of the beautifull frame of the celestiall Orbs; with their quantities, distances, courses, and maruellous motions of the Globes of the Sunne, Moone, Planets and fixed starres. If therefore this my labour shall be gratefully accepted, as I doubt not but it shall, if thou lease iustly to censure thereof: I shall be*

*incouraged hereafter to set forth a worke of more worth: so I referre my selfe to your fauorable iudgements and curtesies, committing thee to the sacred tuition of him that ruleth all. Farewell.*

*Thine in all affection,*

**R. T.**



# INTRODV-CTION TO Aſtronomy.

## *Definitions of the Globe.*

THE Globe is a perfect round bodie, contained vnder one plaine: in the middle thereof there is a point called the Cē-ter, from whence all lines drawne to the outſide are of like length, & called Semidiameters.

The axes of the Globe is a diameter, about which it moueuh; and the ends thereof are called the poles of the Globe.

In this reſpect the frame of the heauens is called the Globe of the heauens, and the earth his Center.

The axes is a line imagined, paſſing by

the Center of the earth to the heauens, and the ends thereof is called the poles, which are two points imagined in the heauens, whereof the one is called the North pole, and the other the South pole.

### Of the Circles of the Globe.

Circles of the Globe are certaine imaginarie lines, and are termed either lesser, or greater Circles.

Greater Circles are such as diuide the Globe into two equall parts.

Lesser are such as diuide the Globe into vnequall parts.

Greater Circles of the Globe in common accounts are sixe in number, *viz.*

The { Horizon. Meridian. Equinoctiall. Zodiake. Two Collures. }

Lesser Circles in common account are foure in number, *viz.*

The { Two Tropicks. Two poler Circles. }

The Horizon diuideth that part of the heauens

heauens we do see, from that part we see not, and is that Circle, where standing in a plaine field, and looking about, you would imagine the earth and heauens do meete together, and cannot be perfectly discerned but at sea.

The axes of the Horizon, is an imagined line, passing by the Center of the earth to the heauens, and the ends thereof are called the poles *Zenith* and *Nadir*.

The *Zenith* is the point direct ouer our heads, and the *Nadir* direct vnder our feet.

As a man moueth himselfe any way, so is altered the Horizon.

The Meridian cutteth the Horizon at right sphericall angles, and passeth by the poles of heauen, and by the *Zenith* and *Nadir*, and is that Circle wherein the ☉ is at noone, and at midnight: it diuideth the Globe into two equall parts by East and West, whose axes is a line passing by the Center of the earth to the heauens, and the ends thereof the poles, which are the two points of the intersection of the East and West.

Any man mouing directly North and South, keepeth the same Meridian: but going East or West, he altereth the same.

The

The Equinoctiall cutteth the Meridian at right sphericall angles, and lieth equidistant betwixt each poles, and diuideth the Globe into two equall parts, by North and South parts, to which Circle when the ☉ commeth vnder it, it maketh the day and night of like length to all people in the world, except vnder the poles, and the ☉ commeth vnder this Circle two dayes in the yeare, *viz.* the 11. of March, and on the 14 of September.

The axes and poles whereof are the axes and poles of heauen.

The Zodiacke is a great Circle, hauing in breadth twelue degrees, which breadth is limited for the wandring of planets, vpon which Circle are the twelue signes placed, which are twelue Constellations.

A Constellation is any certaine number of stars, gathered together into one forme by the ancient Astronomers, who haue giuen them names, whereby they are knowne to all Christendome: which signes haue certaine characters giuen vnto them, and are these following.

1. *March.*

| | | | | | |
|---|---|---|---|---|---|
| 1 | *March.* | Northern ſignes. | 1 | *Aries.* | ♈ |
| 2 | *Aprill.* | | 2 | *Taurus.* | ♉ |
| 3 | *May.* | | 3 | *Gemini.* | ♊ |
| 4 | *Iune.* | | 4 | *Cancer.* | ♋ |
| 5 | *Iuly.* | | 5 | *Leo* | ♌ |
| 6 | *Auguſt.* | | 6 | *Virgo.* | ♍ |

| | | | | | |
|---|---|---|---|---|---|
| 7 | *September.* | Southern ſignes. | 7 | *Libra.* | ♎ |
| 8 | *October.* | | 8 | *Scorpio.* | ♏ |
| 9 | *Nouember.* | | 9 | *Sagittarius.* | ♐ |
| 10 | *December.* | | 10 | *Capricornus* | ♑ |
| 11 | *Ianuary.* | | 11 | *Aquarius* | ♒ |
| 12 | *February.* | | 12 | *Piſces.* | ♓ |

The firſt ſixe are called Northern ſignes, for that they are placed vpon the North ſide of the equinoctiall; and the laſt ſixe are called Southerne ſignes, for that they are placed vpon the South ſide of the equinoctiall.

In the middle of the Zodiacke is a line called the eclipticke, from which line the Center of the ☉ neuer ſwarueth, and this line cutteth the equinoctiall at oblique angles, and ſwarueth from it 23 degrees 30 minutes: which line when the ☉ and ☾ are in a diameter, that is, oppoſite, then is the ☾ eclipſed, that is, darkned by the ſhadow

dow of the earth, the earth being betwixt the ☉ and the ☾.

And when the ☉ and ☾ are both vnder the line in a ſemidiameter, then is the ☉ eclipſed, the ☾ being interpoſed betwixt our ſight and the ☉: this line eclipticke is deſcribed vpon the Globe for the whole Zodiake, whoſe axe is a line paſſing by the Center of the earth to the heauens, and the ends thereof are his poles, which are two points ſo farre diſtant from the poles of the world, as the ☉ his greateſt diſtance from the equinoctiall, *viz*. 23. degrees 30 min.

The two Collures are two meridians cutting the equinoctiall and the eclipticke into foure equall pares, the one paſſing by the firſt point of ♈ and ♎, and is called the equinoctiall Collure. The other paſſing by the firſt point of ♋ and ♑, and is called the ſolſtitiall Collure: theſe two Circles do diuide the yeare in foure equall parts, *viz*. Spring-time, Sommer, Harueſt, and Winter.

| | | | | | |
|---|---|---|---|---|---|
| 1 | ♈ | Spring-time. | 4 | ♋ | Sommer. |
| 2 | ♉ | | 5 | ♌ | |
| 3 | ♊ | | 6 | ♍ | |

7 ♎

| | | | |
|---|---|---|---|
| 7 ♎ 8 ♏ 9 ♐ | Haruest. | 10 ♑ 11 ♒ 12 ♓ | Winter. |

The meaning whereof is thus: From that time the ☉ entreth into ♈, till it enter into ♋ is called Spring time, and so of the rest, so that it is the passage of the ☉ in the signes, that causeth the alteration of season, and the ☉ passeth thoroughout the whole signes in one yeare, *viz.* in 365 dayes and 6 houres neare.

## *Of the lesser Circle.*

THe Tropicke of ♋ is a Circle parallel to the equinoctiall 23 degrees 30 min. distant from it Northward, & is that Circle vnder which the Center of the ☉ maketh her diagonall arke, when she is in the first point of ♋, which is to vs that haue Northern Latitude, the longest day in the yeare being the 12 or 13 of Iune.

The Tropicke of ♑ is a Circle parallel to the equinoctiall, so farre to the Southward, as the Tropicke of ♋ is Northward, *viz.* 23 degrees 30 min. and is that Circle vnder which the Center of the ☉ maketh her

her diagonall arke, when she is in the first point of ♑, which to vs that haue Northern Latitude, is the shortest day in winter *viz.* the 12. or 13. of December. These two Circles are termed the limit of the ☉ progresse: for betweene these two Circles the ☉ hath his continuall course, and neuer exceedeth beyond any of them.

The Circle articke is a Circle parallel to the equinoctiall, so farre distant from the North pole, as the tropicke of Cancer is from the equinoctiall, *viz.* 23. degr. 30. min.

The Circle antarticke is a Circle parallel to the equinoctiall so farre distant from the South pole, as the tropicke of ♑ is from the equinoctiall, *viz.* 23. degr. 30. min.

Now you must vnderstand, there is but one equinoctiall, one Zodiacke, one Ecliptick, two Collures.

But there are diuers Meridians, all which meete in the two poles of the world, and cut the equinoctiall at right angles, and are so many in number as there can be points imagined in the equinoctiall.

There are diuers Horizons: for the Horizon altereth to any man, according as he moueth him selfe from his place of being.

There are diuers parallels, so called for that

that they are parallel to the equinoctiall, and are so many in number, as there can be points imagined in the Meridian.

Besides these Circles before mentioned, there are foure other kinde of Circles of great vse, *viz.* Azminth and Almicanthars, Circles of Longitude and Latitude.

Azminths are great Circles, and meete all in the Zenith and Nadir, and cut the Horizon at right angles, and are numbred in the Horizon.

Almicanthars are lesser Circles parallel to the Horizon, as the parallels are to the equinoctiall, and are numbred from the Horizon towards the Zenith.

Circles of Longitude are great Circles, meeting all in the poles of the Eclipticke, and cut the Eclipticke at right angles, and are numbred in the Eclipticke.

Circles of Latitude are lesser Circles parallel to the Ecliptick, as the parallels are to the equinoctiall, and are numbred from the Eclipticke, to the poles of the Eclipticke.

Euery Circle of the Globe is imagined to be diuided into 360 degrees, and euery degree into 60 minutes, euery minute into 60 seconds, and so tell the tenth for the precisenes,

cisenesse, for that a degree in the heauens is a large space.

In euery great Circle the degrees are equall one to another.

In euery lesser Circle they are equall in the same Circle, but vnequall to those of another Circle; according as they grow nearer the poles.

There belongeth to the furnishing of a Globe two other things, that is, an houre Circle, with Index and a quadrant of Altitude.

The houre Circle is of brasse, diuided into 24 houres by twice 12, and is to be placed vpon the Meridian, vpon the pole eleuated parallel to the equinoctiall.

The Index is a little ruler to be put vpon the pole.

The quadrant of Altitude is a bowed ruler of brasse, diuided into 60 degrees, equal to the degrees of the Globe, and hath a ioynt to fasten the same vpon the Meridian, & is alwayes to be placed vpon the Zenith.

For the practise of Astronomie and Cosmographie, there are two Globes made, the one of the Heauens, which is called the Celestiall globe, and the other of the earth, which is called the Terrestriall globe.

Vpon

Vpon the Celestiall Globe are pictured al the starres vpon the Conuexitie thereof, as we behold them in the heauens, in the Concauitie thereof in forme and distance.

Vpon the Globe of the earth is set sea and land, making one perfect body, all the knowne parts being laid downe in forme, proportion, and distance by scale, according to the proportion of the earth.

### *Of the superficies of the Celestiall Globe.*

TO the intent that the knowledge of starres might be brought in rule and memorie of men, therefore the ancient Astronomers gathered them together into certaine constellations, and gaue them names, whereby they are knowne vnto all the world, ŷ haue the knowledge of letters.

A Constellation is a certaine number of starres gathered together in one forme, and so retaine their names, whereby they are particularly knowne, and are in number, according to the ancient account, 48. and are diuided into three parts, *viz.*

| | | |
|---|---|---|
| Northern | Constellations | 21 |
| Zodiake | | 12 |
| Southerne | | 15 |

The Northern Constellations are 21. viz.

| | | |
|---|---|---|
| 1 | *Ursa minor.* | 7 |
| 2 | *Vrsa maior.* | 27 |
| 3 | *Draco.* | 31 |
| 4 | *Cepheus.* | 11 |
| 5 | *Bootes or Arctophylax.* | 22 |
| 6 | *Corona Borealis.* | 8 |
| 7 | *Engonasius aut Hercules* | 29 |
| 8 | *Lyra.* | 10 |
| 9 | *Olor aut auis.* | 17 |
| 10 | *Cassiopea.* | 13 |
| 11 | *Perseus.* | 26 |
| 12 | *Heniochus or Auriga.* | 14 |
| 13. | *Serpentarius.* | 24 |
| 14 | *Serpens.* | 18 |
| 15 | *Sagitta.* | 5 |
| 16 | *Aquila.* | 9 |
| 17 | *Delphinus.* | 10 |
| 18 | *Equulus light Horse.* | 4 |
| 19 | *Pegasus.* | 20 |
| 20 | *Andromeda.* | 23 |
| 21 | *Triangulus.* | 4 |
| | | 332 |

Zodiake

| | | | |
|---|---|---|---|
| Zodiake Constellations are 12. viz. | 1 | *Aries.* | 13 |
| | 2 | *Taurus.* | 23 |
| | 3 | *Gemini.* | 18 |
| | 4 | *Cancer.* | 9 |
| | 5 | *Leo.* | 27 |
| | 6 | *Virgo.* | 26 |
| | 7 | *Libra.* | 8 |
| | 8 | *Scorpius.* | 21 |
| | 9 | *Sagittarius.* | 31 |
| | 10 | *Capricornus.* | 28 |
| | 11 | *Aquarius.* | 42 |
| | 12 | *Pisces.* | 34 |
| | | | 280 |

| | | | |
|---|---|---|---|
| Southerne Constellations are 15, viz. | 1 | *Cetus.* | 22 |
| | 2 | *Orion.* | 38 |
| | 3 | *Flumen Eridanus.* | 34 |
| | 4 | *Lupus.* | 12 |
| | 5 | *Canis maior.* | 18 |
| | 6 | *Canis minor vel Canicula.* | 2 |
| | 7 | *Argonauis.* | 41 |
| | 8 | *Hydra.* | 25 |
| | 9 | *Crater.* | 7 |
| | 10 | *Coruus.* | 7 |
| | 11 | *Centaurus.* | 37 |
| | 12 | *Fera aut Lupus.* | 19 |
| | 13 | *Ara vel altar.* | 7 |
| | 14 | *Corona austrina vel meridion.* | 13 |
| | 15 | *Piscis notius.* | 11 |
| | | | 293 |

Besides these there are 120. starres that are exempt out of all the Constellations, so that the number of stars set vpon the Globe are 1025, and diuers of them haue proper names, which I here omit.

You must vnderstand that all the starres in heauen are not numbred, nor cannot, for that diuers of them are so small, but these 1025 are the principallest amongst them, and all that haue yet euer bene accounted of.

You must vnderstand, that of these stars some are greater then other, and are distinguished in sixe sorts of bignesses, and their measures is the earth, and their proportions are thus deliuered, *viz.*

A starre of the first bignesse is 107. times bigger then the earth.

A starre of the second bignes is 90. times the globe of the earth.

A starre of the third bignes is 72 times the globe of the earth.

A starre of the fourth bignes is 54 times the globe of the earth.

A starre of the fifth bignes is 36 times the globe of the earth.

A starre of the sixth bignesse is 18 times the globe of the earth.

Starres

| | | | | | |
|---|---|---|---|---|---|
| Stars magnitude, | 1 | and the quantitie of each magnitude. | 15 | In all 1025 |
| | 2 | | 45 | |
| | 3 | | 208 | |
| | 4 | | 474 | |
| | 5 | | 427. | |
| | 6 | | 49 | |
| | | Cloudie. | 5 | |
| | | Obſcure. | 9 | |
| | | Parnaſſus fayre. | 3 | |

Vpon each Globe there is a table ſet downe in what forme euery ſtarre of any bigneſſe is made, whereby you may readily know any ſtarre in any Conſtellation of what bigneſſe it is.

And thus much in briefe for the ſuperficies of the Globe of the Heauens.

# TERRESTRIAL GLOBE.

VPon the Globe of the earth is set the picture of the earth, land, and sea, making one perfect round body: and as the Circles (before mentioned) are imagined in the Heauens, so part of them are imagined and drawne vpon the Globe of the earth, as the Equinoctiall, the Meridians and Parallels.

The Globe of the earth is first generall, diuided into fiue parts, called fiue Zones: that is, one burnt, two temperate, and two frozen or cold Zones.

The distance betwixt the two Tropicks is called the burnt Zone.

The distance from the tropicke of Cancer to the Circle articke, is called the temperate Zone Northward.

The distance from the tropicke of ♑ to the Circle antarticke, is called the temperate Zone Southward.

The space of the earth contained within the

the two poller Circles, is termed the two frozen Zones.

The earth is reckoned by Longitude and Latitude.

Longitude is numbred in the equinoctiall by meridians from the generall and fixed meridian, into the East, and containeth the whole compasse of the earth, *viz.* 360 degrees.

The fixed meridian is that meridian that passeth by the Iland of *Azores*, according to the ancient Cosmographers: yet the same may be placed in any other place at pleasure.

The reasons, why they did there begin to reckon the Longitude, were two.

First, for that at ẏ time there was no land knowne to the Westward in that place.

The second was, for that vnder that meridian the Needle had no variation, but did point directly North and South.

The Latitude is reckoned from the equinoctiall towards either pole, and is double, that is, Northerne and Southerne Latitude.

Those are said to haue Northerne Latitude, that dwell on the North side of the equinoctiall, and contrary those are said to

haue Southerne Latitude that dwell on the South side of the equinoctiall.

The earth is diuided into foure parts, *viz.* { *Europa.* *Asia.* *Africa.* *America.*

*Europe* is bounded from *Asia* by the mid-land sea, and *Mare Mauritaniæ*, by the marches called *Palus Meotis*, and by the riuer *Tanis* and *Dwiana.*

The Prouinces are these. { 1 *Germanie.* 2 *Italy.* 3 *France.* 4 *Spayne.* 5 *Denmarke.* 6 *Norway.* 7 *Swedeland.* 8 *Moscouia.* 9 *Polonia.* 10 *Hungaria.* 11 *Clauonia and* 12 *Grecia.*

The principall Ilands. { 1 *England.* 2 *Scotland.* 3 *Ireland.* 4 *Sicilia.* 5 *Candia.* 6 *Corsica.* 7 *Sardigna.* 8 *Negropont.*

*Asia* is bounded from *Europe* by the riuer *Tanis* and *Dwiana*, from *Afrieke* by the narrow necke of Land betwixt the red sea, and the mid-land sea.

The

The Prouinces are { *China.* / *Persia.* / *Part of Moscouia, and* / *Tartaria.* }

In this part of the world was Paradise and the Land of promise.

*Africa* is bounded with the mid-land sea and the red sea.

Prouinces.
1 *Egypt.*
2 *Barbaria.*
3 *Æthiopia.*
4 *Nubia.*
5 *Abasmies.*
6 *Alonomotopa.*

Ilands.
1 *Madagascat, or S. Lorrenyo*
2 *S.Thome.*
3 *Insule de Capo verde.*
4 *Insule de Canaria.*
5 *Insule de Madera.*

*America* is wholly bounded by the Sea, and the straight of *Magellanus*, and consisteth in two parts, *viz.*

{ *Mexicana.* / *Peruana.* }

*Peruana* consisteth in these Prouinces,
1. *Brasilia.*
2. *Tisuada.*
3. *Caribana.*
4. *Cartagena.*
5. *Peru.*
6. *Charcas.*
7. *Chile.*
8. *Chicha*, and
9. *Patagones.*

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*Mexicana* consisteth in these Prouinces,
1. *Noua Hispania.*
2. *Terra Florida.*
3. *Noua Albion.*
4. *Califorma.*
5. *Norumbega.*
6. *Noua Francia.*
7. *Estotillant.*

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*Peruana* chiefe Ilands.
1. *Hispaniola.*
2. *Cuba, with all the other Ilands of the West India.*
3. *Margarite Insule.*
4. *Molucque Insule.*
5. *Remores Insule.*
6. *Iaua maior.*
7. *Iaua minor.*
8. *Salomonis Insule.*
9. *All the other Ilands of East India.*

*Mexicana*

*Mexicana* chiefe Ilands. { 1 *Greenland.* 2 *Island.* 3 *Freeseland.* }

The names of the Seas.

1 *Ocean Sea.*
2 *Narrow Sea.*
3 *Mediterraneum Sea.*
4 *Mare maior.*
5 *Caspium mare.*
6 *East Indian Sea.*
7 *Red Sea.*
8 *Persian Sea.*
9 *South Sea.*

And thus much in briefe for the superficies of the Terrestiall Globe.

You must vnderstand that the ecliptick is described vpon the terrestriall Globe aswel as vpon the Celestiall, because that all the conclusions of the ☉ are as well wrought vpon the Terrestriall Globe, as by the Celestiall, and the same furniture is to be fitted vpon the Terrestriall Globe that belongeth to the Celestiall: and thus much in briefe for their formes.

Now followeth their vse: first of the Celestiall, and next of the Terrestriall.

FIRST

## FIRST PROPOSITION OF the Celestiall Globe.

*The day of the moneth being giuen, to finde the place of the ☉.*

VPon the Horizon of the Globe is graduated the theoricke of the ☉, that is, there is placed the moneths, and their daies, the signes and their degrees. Therefore finde the day of the moneth and right against the same you shall finde the signe and degree that the ☉ possesseth.

### Proposition 2.

*The place of the ☉ being giuen, to finde the day of the moneth.*

FInde the place of the ☉ in the Horizon, and against the same you shall finde the day of the moneth.

### Proposition 3.

*The place of the ☉ being giuen, to finde the Declination.*

BRing the place of the ☉ to the Meridian of the Globe, and the portion of the

the Meridian included betwixt the place of the ⊙ and the equinoctiall, sheweth the declination.

Proposition 4.

*The place of the ⊙ and the Meridian height of the ⊙ being giuen, to finde the height of the Pole.*

BRing the place of the ⊙ to the Meridian of the Globe, and from that point account downewards to the Horizon the height of the ⊙, and let the ends thereof end in the Horizon: then in the opposite part, you shall finde cut on the Meridian the height of the Pole, that is, the portion of the Meridian included betwixt the Pole and Horizon, sheweth the height of the Pole.

Proposition 5.

*To rectifie the Globe fit for vse, the eleuation of the Pole being knowne.*

SEt the poles answerable to the poles of Heauen.

Pro-

## Proposition 6.

*To rectifie the quadrant of altitude.*

SEt the ioynt thereof vpon the Meridian so farre distant from the equinoctiall as the pole is eliuated aboue the Horizon, that is, place the ioynt in the Zenith.

## Proposition 7.

*To rectifie the Index of the houre Circle, for any day appointed.*

BRing the place of the ☉ to the Meridian of the Globe, and then put the Index vpon 12 of the clocke, or vpon that 12, which is vppermost from the Horizon.

## Proposition 8.

*The eleuation of the Pole and place of the ☉ being giuen, to finde the Meridian, height of the ☉*

THe Globe rectified, bring the place of the ☉ to the meridian, and the degrees from the place of the ☉ to the Horizon, shew the demaund.

Pro-

### Proposition 9.

*The elevation of the Pole and place of the ☉ being given, to find the houre of the ☉ rising.*

THe Globe and Index of the houre circle being rectified, bring the place of the ☉ to the East side of the Horizon, and the Index of the houre circle sheweth the houre of the ☉ rising.

### Proposition 10.

*The elevation of the Pole and place of the ☉ being given, to finde the houre of the ☉ setting.*

THe Globe and Index of the houre circle being rectified, bring the place of the ☉ to the West side of the Globe, and the Index of the houre circle sheweth the houre of the ☉ setting.

### Proposition 11.

*The elevation of the Pole and place of the ☉ being given, to finde the length of the day.*

FInde the houre of ☉ setting by the last proposition, and double that time, so haue you the length of the day.

Pro-

Proposition 12.

*The eleuation of the Pole and place of the ⊙ being giuen, to finde the Amplitude.*

THe Globe rectified, bring the place of the ⊙ to the Horizon, and the portion of the Horizon included betwixt the place of the ⊙, and the point of East or West sheweth the amplitude.

Proposition 13.

*The place of the ⊙ and Amplitude being giuen, to finde the height of the Pole.*

TVrne the Globe and moue the Meridian vntill you haue fitted the place of the ⊙ in the point of the Amplitude, and then the pole of the Globe sheweth the height of the pole, that is, the place included betwixt the pole of the Globe and the Horizon, sheweth in the Meridian the height thereof.

Proposition 14.

*The place of the ⊙ being giuen, to finde the right ascention thereof.*

BRing the place of the ⊙ to the Meridian, and the degree cut by the Meridian

dian

dian in the equinoctiall, sheweth the right Ascention.

### Proposition 15.

*The elevation of the Pole and place of the ☉ being given, to finde the crooked Ascention.*

THe Globe rectified, bring the place of the ☉ to the East side of the Globe, and the degree cut by the Horizon in the equinoctiall, sheweth the crooked Ascention.

### Proposition 16.

*To finde the difference of Ascention.*

FIrst finde the right, and then the crooked Ascention: then take the lesse from the greater, and that rest sheweth the difference of Ascention, except that remainer do exceed 180 degrees, and then that rest taken from 360 degrees, sheweth the difference of Ascention.

### Proposition 17.

*By the difference of Ascention, to finde the length of the day.*

DOuble the difference of Ascention, & reduce that into time, by allowing 15

degrees to an houre, and 4 minutes to a degree, and that sheweth the length of the day, longer or shorter then an equinoctiall day: if the ☉ haue declination towards the pole eleuated, then is it longer then an equinoctiall day, but otherwise is shorter.

The equinoctiall day is 12 houres.

## Proposition 18.

*The eleuation of the Pole, and declination of the ☉ being knowne, and the height of the ☉ being taken, to find the houre of the day and Azminth of the ☉.*

THe globe Index of houre circle, and quadrant of altitude being rectified, turne the Globe, and moue the quadrant of altitude, vntill you haue fitted the place of the ☉ in the Almicanthar, then doth the Index of the houre circle shew the houre, and the quadrant of Altitude sheweth in the Horizon the Azminth.

In this proposition you must consider whether it be in the forenoone or afternoone: if in the forenoone, put the quadrant on the East side: and if in the afternoone, on the West side of the Globe.

Pro-

## Proposition 19.

*The height of the ☉ being giuen, to finde the houre of the day.*

THe globe Index and quadrant of altitude being rectified, bring the place of the ☉, vntill it cut the height giuen in the quadrant of altitude, and the Index in the houre circle sheweth the houre.

## Proposition 20.

*The houre of the day being giuen, to finde the height of the ☉.*

ALL things rectified, as in the last Proposition, turne the Globe vntill the Index cut the houre: then bring the quadrant of altitude ouer the place of the ☉, and the degree cut on the quadrant of altitude, sheweth the height of the ☉.

## Proposition 21.

*The Azminth of the ☉ being giuen, to finde the houre of the day, and height of the ☉.*

ALL things rectified, put the quadrant of Altitude to the Azminth: then

turne the Globe, vntill the place of the ☉ touch the edge of the quadraut, then the Index of the houre Circle sheweth the houre, and the degree cut on the quadrant of altitude, sheweth the height of the ☉ at that time.

## Proposition 22.

*The houre of the day being given, to finde the Azminth of the ☉.*

ALL things rectified, turne the Index to the houre: then bring the quadrant of Altitude on the place of the ☉, and the end thereof in the Horizon sheweth the Azminth.

OF



# OF THE STARS.

Proposition 1.

*To find the Declination of any Starre.*

WOrke by the Starre, as you did by the ☉ in the 3. Proposition, *viz.* An example: *Arcturus* in *Bootes leggs* brought to the Meridian of the Globe, the portion of the Meridian betwixt the place and the equinoctiall, sheweth his declination to be Northerne.

Proposition 2.

*The meridian height of any starre being giuen, to finde the height of the Pole.*

WOrke by the starre, as you did by the ☉ in the 4. Proposition, *viz. Arcturus meridionall* height supposed to be giuen 60 degr. then the height of the Pole opposite is found to be 52 degrees.

## Proposition 3.

*To finde the houre of rising of any starre.*

AL things rectified, worke by the starre, as by the ☉ in the 9. Proposition; for to know at any time the rising of *Arcturus*, or any other *, you must know in what signe the ☉ is. As for example: The ☉ rising in the 19 degree of ♑, which being brought vnder the fixed Meridian, and then the Globe and Index rectified, *Arcturus* is then found to rise at 6 houres, and 30 minutes in the morning, and setteth in the euening at houre 10. 30 minutes.

## Proposition 4.

*To finde the houre of any starre setting.*

AL things rectified, worke by the starre as by the ☉ in the 10 Proposition, or precedent demonstration.

## Proposition 5.

*To finde the time of any starre aboue the earth.*

FIrst finde the houre of rising, and then the houre of setting: the difference of which

which time is the thing required.

*Example.*

*Arcturus* is found by the former Proposition to rise at houre 6. 30, which is 5.30 before 12. and he setteth at 10. 30: both which times added together, maketh 16 houres, and so is *Arcturus* found to be 16 houres aboue the earth.

## Proposition 6.

### *To finde the amplitude of any starre.*

WOrke as by the ☉ in the 12 Proposition. Example: *Arcturus* amplitude is found then, when he is brought to the Horizon; in the side is 37 degrees of Amplitude.

## Proposition 7.

### *The amplitude of any starre being giuen, to finde the height of the Pole.*

WOrke bz the *, as by the ☉ in the 13 Proposition. Example: *Arcturus* amplitude being giuen, 37 degrees; the Pole of heauen is found to be 52 degr. aboue the Horizon eleuated.

Proposition 8.

*To finde the right Ascention of any starre.*

WOrke by the starre, as by the Sun in the 14 Prop. Example: Bring *Arcturus* to the Meridian, and the point in the equinoctiall being then vnder the Meridian, sheweth the right Ascention to be 209 degrees.

Proposition 9.

*To find the crooked Ascention of any starre.*

WOrke by the starre, as you did by the Sunne in the 15 Proposition. Example: The place of *Arcturus* being brought to the Horizon, the degrees of the equinoctiall against the Horizon, do proue his crooked Ascention to be 178 degrees.

Proposition 10.

*To finde the Latitude of any starre.*

PVt the center of the Quadrant of altitude, being taken from the Meridian, vpon

vpon the pole of the ecliptické, *viz.* *Arcturus* Latitude is to be measured from the pole eclipticke with the Quadrant of altitude, and is found to be 31 degr. 30 min. and his Longitude is in 19 degrees of ♎, to be reckoned with the quadrant of altitude, being brought from the pole eclipticke, to the eclipticke or zodiacke, passing right on the place of *Arcturus.*

*Compostella* in *Galicia* is by sundrie matters found to be in the 43 parallel, which is in Latitude 43 degrees Northward, and in the 11 meridian 30 minutes, which is in Longitude 11 degr. ½.

Circles of
- Latitude or Altitude, beginneth from the equinoctiall by parallels Northward or Southwards, to be reckoned to 90 degrees.
- Longitude to be reckoned by Meridians numbred in the equinoctiall, which is that meridian passing betweene the equinoctiall and the Iles of the Canaries, and are numbred into the East round about the globe, *viz.* to 360 degrees.

One

One houre containeth 15 degrees or 60 minutes, and 4 of those minutes containe one degree: therefore diuiding still your number of minutes by 4, and the quotient shall be degrees.

*Example.*

Twelue minutes of an houre giue three degrees of Longitude, which is 12 min. so that euery minute of an houres time is $\frac{1}{4}$ part of one degree in Longitude, as is proued by the worke following.

Here followeth the 11 Proposition concerning the Starres.

*Two starres seene in the Horizon to rise or to set at one time, thereby to finde the height of the Pole.* Example.

THe two starres rising together, the one is the first starre in *Orions girdle*, and the other * is that which is in *Pegasus* nose: therefore turne the Globe vntill you fit the said two starres equall with the Horizon in the East: then shall the portion betwixt the North pole and that Horizon, teach you the poles height to be in 53. degrees.

Pro-

Propoſition 12.

*The place of the ☉ and the length of the day being giuen, to finde the height of the Pole.*

THe place of the ☉ giuen is in 17 degr. of ♎, and the length of the day giuen, is 11 houres. Therefore firſt finde out the right Aſcention of the ☉, then number frõ that place ſo many meridians as do containe the halfe length of the day giuen, and let the end of thoſe degrees reſt vnder the fixed meridian: then moue the meridian of the Globe, vntill you fit the place of the ☉ in the Horizon, and then ſhall you finde vpon the meridian the iuſt height of the Pole. For example.

The ☉ being in 17. degrees of ♎, her right aſcention is found to be 195 degrees, the dayes length giuen is 11: therefore take the one halfe, that is 5 houres $\frac{1}{2}$: which time reduced into degrees, *facit* 82 degrees 30 min, the which ſubtracted out of the ☉ aſcention 195, there reſt 112 degr. 30 min. which number finde out vpon the equinoctial, and bring it to the fixed meridian, and there keepe the ſame, vntill by mouing the meridian you do bring the 17 degree of ♎ equall with the Horizon: that done, then will

will the height of the Pole be found eleuated iust 51 degrees.

## Proposition 13.

*The length of the day and amplitude of the ☉ being giuen, to find the height of the Pole, and the ☉ declination.*

THe length of the day giuen, is eleuen houres. The amplitude of the ☉ giuen, is 10 degrees. Therefore number from the first meridian Westward, those degrees that haue the length of the giuen day, reduced in degrees do yeeld, and let the end of those degrees begin in the equinoctiall rest vnder the fixed meridian: then moue the globe vntill you haue fitted the first meridian to cut in the amplitude giuen, and then shall the meridian of the Globe shew the iust height of the pole. Example.

The length of the day giuen, is 11 houres, whose halfe is 5 ½, the same reduced into degrees *facit* 28 degr. 30 min. the which taken out of 360 degrees, rest 277 degr. 30 min. the latter point whereof fixe vnder the fixed meridian, there holding the same, vntill by mouing of the fixed meridian, you can bring the giuen amplitude on the East

side,

side, to sit vpon the first point of the meridian: which done, then shall you finde the Pole eleuated 51 degrees aboue the Horizon.

## PROPOSITIONS THAT ARE resolued vpon the Terrestriall Globe.

### *That all Propositions concerning the ☉, may as well be resolued vpon the Terrestriall as the Celestiall Globe.*

### Proposition 1.

*To finde the Latitude of any place.*

BRing the place, whose Latitude is required, to the meridian of the Globe, and the portion of the meridian included betweene that place and the equinoctiall, sheweth the Latitude.

*And so are the following places in Latitude Northward.*

| | |
|---|---|
| *London* | 51.d.30.m. |
| *Hamborough.* | 54. |
| *Amsterdam* | 52.full. |
| *Antwerpe.* | 51. scarce. |
| *Bolloigne.* | 48.30. |
| *Paris.* | 48.30. |

*Lyons*

| | |
|---|---|
| *Lyons.* | 46. |
| *Bordeaux.* | 43.40. |
| *S. Ander.* | 42.30. |
| *The Groyne.* | 43. |
| *Lisbone.* | 39.30. |
| *Sevill.* | 37.30. |
| *Cape-Martin* | 39.40. |
| *Genoa* | 45. |
| *Roma.* | 42. |
| *Naples.* | 41. |
| *Palermo.* | 37.30. |
| *Venice.* | 46. |
| *Ragusi.* | 42. |
| *Ciprus.* | 37.15. |
| *Rhodus,* | 38. |
| *Ierusalem.* | 34.40. |
| *Teneriffe.* | 28.30. |
| *Capo-blanco.* | 20. |
| *Isla S. Helena.* | 16.40. *Southward.* |
| *Nombre de dios.* | 9. *Northward.* |
| *Panama.* | 8. |
| *Capo de Vela.* | 10. |
| *Havana.* | 22. |
| *San Domingo.* | 17.30 |
| *Isle Icaris.* | 66. |
| *Farę Insula.* | 64.30. |
| *Islandie.* | 67.30. |
| *Gibraltare.* | 35. |

Pro-

Proposition 2.

*To find the Longitude of any place.*

BRing the place appointed to the meridian of the Globe, and the degrees cut by the meridian in the equinoctiall, sheweth the longitude.

And so are the places hereunder found in longitude, *viz.*

| | |
|---|---|
| *London.* | 20.30. *longitude.* |
| *Hamborough.* | 33.30. |
| *Antwerpe.* | 26.30. |
| *Paris.* | 24. |
| *Bordeaux.* | 22. |
| *S. Ander.* | 18.30. |
| *The Groyne.* | 13. |
| *Lisbone.* | 13. |
| *Seuill.* | 17. *degrees.* |
| *Genoa.* | 35. |
| *Roma.* | 37. |
| *Venice.* | 40. |
| *Palermo.* | 37.30. |
| *Ierusalem.* | 69. |
| *San Domingo in the West Indies.* | 310. |
| *Teneriffe.* | 3. *degr.* 30. |
| *Palona.* | 1. *degr. longitude.* |

Pro-

## Proposition 3.

*To finde the difference betweene any two places vpon the Globe.*

TAke the distance with a paire of compasses, and apply the same to the equinoctiall, accounting for euery degree 60 miles, or 20 leagues, or according to that countrey wherein you are.

And so are the distances betweene

| | | | |
|---|---|---|---|
| London and | *Ierusalem* | 39. *facit* | 795. *leagues.* |
| | *Antwerpe* | 3.30. *facit* | 70. |
| | *Paris.* | 4.20. *facit* | 86. $\frac{2}{3}$. |
| | *Venice* | 13.40. *facit* | 273. $\frac{1}{3}$. |
| | *Bordeaux* | 8.00. *facit* | 170. |
| | *Lisbona* | 13. $\frac{2}{3}$ *facit* | 273. |
| | *Seuill* | 14. $\frac{3}{4}$ *facit* | 295. |
| | *Roma* | 16. $\frac{1}{2}$. *facit* | 330 *leagues.* |
| | *Teneriffe* | 27.00. *facit* | 540. |
| | *Terra noua* | 28.00. *facit* | 560. |

## Proposition 4.

*The Latitude and Longitude of any place being giuen, to find the same vpon the Globe.*

BRing the Latitude of that place to the Meridian of the Globe, and vnder the

the Meridian in the Latitude, shal the place required be found.

By the first and second Proposition is this Proposition resolued.

## Proposition 5.

*To finde the Antipodes to any place.*

BRing the place appointed to the Meridian, and note the Latitude: then in the opposite degree of Latitude vnder the Meridian, you shall find the point of Antipodes.

And after this sort are those Antipodes to *London*, that dwell 51 degrees ½ Latitude, and in 198 degrees Longitude in the South-maine.

And to *Seuill*, those that dwell in 37 degrees, 30 min. Latitude, and 196 degr. Longitude, are Antipodes.

And to *Lisbone*, those that dwell in 39 degr. 30. min. Latitude, and 192 deg. ½ Longitude, are Antipodes.

And to *Antwerpe*, those that dwell in 51 degr. Latitude, and 195 deg. Longitude in the said South-maine.

The people dwelling vnder the North and South pole, and vnder the Eclipticke

D poles,

poles, are Antipodes the one to the other.

Those of *Cusco* in *America*, are Antipodes to those of *Narsinga* in *East India*.

Those of *Lyma* and *Calicut*, are Antipodes to each other.

The *Insulanes* of *Serrana* and *Iona*, are Antipodes to each other.

Those of *Xalisco*, *Colinia*, *Guatatlan*, *Petratlan*, *Guaxaca*, &c. are Antipodes to the *Insulanes* of *S. Laurence*.

Those of *Malaca* are Antipodes to that people dwelling in the prouince of *Omagua*.

## Proposition 6.

*To finde the difference of time betweene any two places.*

BRing the Eastermost place to the Meridian, and rectifie the Index: then bring the second place also to the Meridian, and marke where the Index cuts, it sheweth the houre at that second place, when it is noone at the first. Or to do this more precisely, finde the difference of the Longitude betwixt these two places: which remainder reduce into time, by allowing 15 degr. for an houre, and the difference is found.

Pro-

## Proposition 7.

*To finde the difference of the longest day betweene any two places.*

FInde the length of the day at each place, by the Proposition before taught, and the difference betweene them is found by their seuerall lenghts.

First it is to be noted, in Northern Latitude the longest day of the yeare is, when the ☉ is in the first point of ♋, and therefore according to that place is the longest day of seueral places here vnder set down, the which precisely haue bene calculated, by the difference of Ascention, that the ☉ made at one same time in seuerall places.

*London* lying in the Latitude of 51 deg. 30 m. and the place of the ☉ taken in the first degree of ♋, had right Ascention 90 degrees, and crooked Ascention 58. degr.

*Lisbona* Latitude 39.30, makes 10 degr. difference of Ascention: which doubled, *facit* 40 degr. those reduced into time *facit* 2 houres 40 min. those added to 12, *facit* 14 houres, 40 min. for the longest day.

*Genoa* Latitude 45 degrees, the ☉ right Ascention is 90 degrees, the crooked 68,

the difference is 22: which doubled is 44, which make 2 houres 56 min. of time: those added to 12 houres, make 14 houres 56 m. for the longest day.

*Roma* Latitude 42 hath the same difference of Ascention of the ☉, and therefore their longest day is equall with those of *Genoa* 14 houres 56 min.

*Naples* Latitude 41 degr. right Ascention 90, crooked 64.30, and the difference thereof *facit* 48 degrees, 2 houres, 54 min. which added, *facit* 14 houres, 54 min.

*Venice* Latitude 46 degr. right Ascention 90, crooked 64.30. and the difference thereof is 51 degr. *facit* 3 houres, 24. min. which added, *facit* 15 houres, 24 min.

*Candia* Latitude 27 degr. in that place, and on the same day make the ☉ 18 degr. difference of Ascention: which doubled, *facit* 36, which is 2 houres, 24 min. of time: which added to 12 houres, *facit* 14 houres, 24 min. for their longest day.

*Rhodes* in Latitude 38 degr. *facit* difference 19 degr. doubled 38, *facit* 2 houres, 32 min. which added, make 14 houres 32 min. for their longest day.

At *Ierusalem* Latitude 34 degr. 40 min. when the ☉ is in the first degree of ♋, he differeth

differeth in Ascention 17 degr. which doubled, *facit* 34 degr. the which make of time, 2 houres 16 minutes, which added to 12 houres, *facit* 14 houres, 16 min. for the longest day.

In *Teneriffe* Iland in the Latitude of 28 degr. 30 min. in the same time the ☉ doth differ in Ascention 12 deg. ½: which doubled maketh 25 degrees, which make of time one houre 40 minutes: those added to 12 houres, *facit* 13 deg. 40 min. for the longest day.

*Capo-blanco* lying in 20 deg. Latitude, in the same time the ☉ hath right Ascention 90 degr. and crooked 42, rest 8 of difference, which doubled, *facit* 16 degr. and of time one houre 4 min. which added to 12, *facit* 13 houres 4 min. for the longest day.

*Panama* Ilands 8. degr. Latitude, right Ascention 96 degr. crooked 87 degr. so is there difference 3 degrees: which doubled, makes 6. degrees, and 24 min. of time: so is their longest day in the yeare 12 houres, 24 minutes

*Southerne Ilands*, situated vnder the line Equinoctiall, there maketh the ☉ no difference of Ascention, and therefore the day

is alwayes of 12 houres long, but winter or sommer the ☉ declineth North or Southward.

*Capo de vela* in the West Indies in 12 degrees of Latitude, at the same time when the ☉ is in the first degree of ♋, hath 90 degrees right Ascention, and crooked 85, diff. is 5. which doubled is 10 min. which reduced make 40 min. of time, which added to 12 houres, sheweth their longest day to be 12 houres, 40 min.

*Hauana* at the same time differeth the ☉ in Ascention 9 degr. 30 minutes, double makes 19, which is time one houre, 16 min. which added to 12, maketh 13 houres, 16 min. for their longest day.

*San Domingo* Iland maketh the ☉ 7 degrees ½ for difference of Ascention: which doubled, maketh 15: is one houre time, so is their longest day 13 houres.

*Faire Iland* in 64 deg. of Latitude, the ☉ hath at the same time 90 deg. right Ascention, crooked 30, rest 60 for difference thereof, which doubled, *facit* 120 degrees, which maketh time 8 houres, those added to 12 houres, sheweth that the longest day there is 20 houres.

At *Icaria* Iland in 66 degrees Latitude, the

the ☉ being in the first degree of ♋, hath 90 degr. right Ascentiō, crooked 20. which difference is 70: those doubled, maketh 140 degr. which is 9 houres, 20 m. of time, so is then longest day in the yeare 21 h. 20 minutes.

*Island* in 67 degr. Latitude, on the same time hath crooked Ascention 8 degr. which taken from 90, differeth 82 degrees, which doubled, are 164 degr. which reduced into time, do giue 10 houres, 56 min. and those added to the equinoctiall day, *facit* 22 h. 56 min. for the longest day in the yeare.

These differences of Ascention is more precisely found by proiecting the figures, and then by scale and compasse, and yet more precisely by Arithmeticall calculation, by which the said difference and length of dayes are found.

14 h. 20. min. *Ierusalem.* 17. 30.
13. 48 d. 56 min. *Teneriffe.* 13. 37.
13. 12 d. 56 min. *Capo-blanco.* 9. 7.
12. 32. *Nombre de dios.* 4.
12. 28. *Panama.* 3. 30.
12.——*San Thome* being vnder the equinoctial, the ☉ maketh no difference, and therefore alwayes 12 houres.

| | | |
|---|---|---|
| 12. 42. | *Capo de vela.* | 5. 15. |
| 13. 20.48.m. | *Hauana.* | 10. 6. |
| 13.3. 4 m. | *San Domingo.* | 7. 53. |
| 20.44.40 m. | *Faue Insula.* | 65. 35. |
| 22. 9.20 m. | *Icari Insula.* | 76. 10. |

## Proposition 8.

*To finde the Horizontall position and difference betwixt any two places.*

First rectifie the Globe for that place, from the which you would know the Horizontall position and distance to the other place: bring also that first place to the Meridian of the Globe, then put the quadrant of Altitude on the Zenith, there let the Globe rest, then bring the quadrant of Altitude ouer the two places, and the degrees cut by the end of the quadrant in the Horizon, sheweth the Horizontall position, and the degree cut by the second place in the quadrant, account from the Center downwards, sheweth the distance.

For example.

The bearing of *Ierusalem* to *London* is 50 degr. accounted from the North point Westward, and the distance is 38 degr. 30 minutes.

minutes. And from *London* to *Ieruſalem* the bearing is 85 degrees, accounting from the South point Eaſtward, and the diſtance is as before.

Now to finde the Rhombe, adde the two Horizontall poſitions together, and the one halfe thereof ſheweth it.

From *Ieruſalem* to *Aleppo*, the bearing is 69 degrees from the North point Weſtward, the diſtance is 43 degr. ½: and *Aleppo* beareth to *Ieruſalem* 77 degrees from the North point Eaſtward.

*Ieruſalem* to *Teneriffe* beareth 77 degr. from the North point Weſtward; and *Teneriffe* to *Ieruſalem* 64 degrees, accounting from the North point Eaſtwards; and the diſtance betwixt the two places is 55 degrees ½.

*Ieruſalem* to *Rome* beareth 67 degr. from the North point Weſtward, diſtance 24 ½: *Rome* to *Ieruſalem* 86 degr. from the South point Weſtward.

*Ieruſalem* to *Gibraltare* beareth 76 degr. from the North point Weſtward, and the diſtance is 43 degr. and *Gibraltare* to *Ieruſalem* beareth 73 degrees from the North point Eaſtward.

OF

# OF THE WORLD.

THe world is diuided into two parts; *viz.* Elementall, and Etheriall parts.

The first is subiect to daily alterations, and containeth foure Elements: that is, the Earth, the Water, the Aire, and the Fire.

An element is that, whereof any thing is compounded, and of it selfe not compounded; of these foure elements, any part of any kinde is named for the whole, as any part of the earth is called the earth.

The Etheriall parts doth compasse the elementall parts in the concauitie thereof, and containeth 10 Spheres: whereof the first is the sphere of the *Moone*, and is next vnto vs. The second is *Mercurius*: the third *Venus*: the fourth *Sol*; the fifth *Mars*: the sixth, *Iupiter*: the seuenth, *Saturnus*: the eight sphere is the starrie firmament: the ninth is the Christaline heauen: The tenth, *Primum mobile*, which doth containe all the rest within it, and whatsoeuer is be-

yond

yond or aboue that, is the habitation of God and his Angels.

The reason how the spheres were first found out, were their contrarie motions in the heauens, obserued by the ancient learned Astronomers, and we finde that by our owne obseruations, as thus, *viz.*

First, all things in the heauens turne about the earth, vpon the poles of heauen in foure and twentie houres, and these motions are from the East into the West, and this we attribute to the motion of the 10 sphere, or *Primum mobile*, without staying, being so appointed by God from the beginning, and carrieth about with him in violence all the other spheres.

All the rest of the spheres haue contrarie motions, euery one in his kinde, though farre slower then the other, and their motions is contrary, from the West to the East, and so are carried about often times by the first mouer, before they make one perfect reuolution in themselues.

The Christaline or ninth sphere his motion is almost vnsensible, and is called the trembling motion, and is performed, according to *Ptolomie* his opinion, in 36000 yeares, but by the opinion of others in a farre

farre longer time, as in 49000. yeares.

The eighth ſphere, being the ſtarrie firmament, performeth his motion in 7000 yeares.

The reſt of the ſpheres are the ſeuen Planets, each ſphere containeth in it but one ſtarre, whereof the vppermoſt and ſloweſt is *Saturne*, which performeth his courſe in 24 yeares, 162 daies, and 12 houres.

*Iupiter* performeth in 11. yeares, 133 dayes, and 23 houres.

*Mars* performeth in 322 dayes, and 23 houres.

*Sol* performeth in 365 dayes & 6 houres, which in one whole yeare.

*Venus* in 385 dayes, 9 houres, performeth her courſe.

*Mercurie* performeth as the ⊙ in 365 daies, and 6 houres.

*Luna* performeth her courſe once euery 27 dayes, and 12. houres.

THE

THE CHARACTERS OF THE Planets are these following.

*Saturne* ♄ *Mars* ♂ *Venus* ♀
*Iupiter* ♃ *Sol* ☉ *Mercurie* ☿ *Luna* ☾

THere are points mouable in the Eclipticke, which are called the Dragons head, and the Dragons taile, and their caracters are these: Dragons head, ☊, Dragons taile ☋.

The Dragons head is the point in the Eclipticke, which the ☾ toucheth, when she crosseth the Eclipticke, and passeth to the Northwards of it.

The ☋ is the point in the Eclipticke, where the ☾ passeth by, when she crosseth the Eclipticke & passeth by it to the South, and these two points are opposite the one to the other.

*To*

### *To know how the Planets reigne every hour of the day, and night, beginning with Saturne.*

Houres of the day.

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sat. | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ |
| | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ |
| | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ |
| | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ |
| | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ |
| | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ |
| | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ |

Houres of the night.

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sat. | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ |
| | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ |
| | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ |
| | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ |
| | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ |
| | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ |
| | ♂ | ☉ | ♀ | ☿ | ☽ | ♄ | ♃ | ♂ | ☉ | ♀ | ☿ | ☽ |

FINIS.